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| EXAMINER | |
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| RYMAN, DANIEL J | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 09/273,197 | Applicant(s) GALLAGHER, ROBERT T. | |
|---|---|---|---|
| | Examiner Daniel J. Ryman | Art Unit 2665 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on 12 February 2002.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1-22 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-22 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 & 5
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: on page 4 line 16 the phrase "opportunity to for real-time analysis" should read "opportunity for real-time analysis."

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 21 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 21 reads that each coaxial link has a demultiplexer, labeled as stage 1, and this/these demultiplexer(s)' *output(s)* is/are coupled to another demultiplexer, labeled as stage 2. Fig. 5 shows a demultiplexer for each coaxial link, taken to be the labeled stage 1 demultiplexers; however, these stage 1 demultiplexers have an *input* coupled to another demultiplexer, taken to be the stage 2 demultiplexer. This inconsistency is confusing and would not enable one skilled in the art of receivers to build the invention.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dail (UPSN 5,765,097) in view of Wala (USPN 6,112,086) in further view of Beveridge (USPN 5,469,495).

6. Regarding claim 1, Dail discloses a hybrid fiber/coax network (col. 2 lines 34-38). This network has a head end (col. 2 lines 34-38); at least one optical distribution node coupled to the head end over at least one fiber optic link (col. 3 lines 9-15); a plurality of coaxial cable links coupled to each of the at least one optical distribution node (col. 3 lines 9-20); a transmitter, disposed at the optical distribution node, that is responsive to signals from the plurality of coaxial cable links, that converts electrical signals to optical signals and that transmits the optical signals to the head end over the at least one optical link (col. 3 lines 40-55); and a head end which could be a cable television head end or a telephone central office (col. 3 lines 5-8).

7. Dail does not specifically disclose that the electrical signals are analog, although the electrical signals could be analog. Dail also does not disclose that the optical signals are baseband digital signals, although the optical signal could be baseband digital. Additionally, Dail does not disclose that there is a receiver on the head end that converts the optical signal back to an electrical signal, although that the cable television head end or telephone central office could convert the optical signal back to an electrical signal. Wala and Beveridge teach using an optical link to pass digital signals converted from analog signals. (Wala: col. 3 lines 3-18; Beveridge: col. 2 lines 1-18). Wala does this because "the ability to analog modulate and demodulate light, the limitations imposed by line reflections, and path loss on the fiber all introduce significant

distortion and errors into an analog modulated signal" (col. 2 lines 58-61). On the receiver end, the process is reversed and the digital signal is converted back to an analog signal (Wala: col. 3 lines 3-18; Beveridge: col. 2 lines 18-22). It is implicit that this is done to allow the receiving end to utilize the analog signals that were originally transmitted, and so the system acts as if there is no digital conversion taking place. Although Wala does not teach the use of a baseband digital signal Beveridge does (col. 2 lines 10-20). Wala uses wavelength division multiplexing instead of baseband because Wala uses one cable to both receive and transmit signals (col. 2 lines 14-16). Wavelength division multiplexing is more complicated than sending baseband signals, so it would have been obvious to use baseband signaling because the system is not receiving return signals on the fiber optic line. It would have been obvious to one of ordinary skill in the art of hybrid fiber/coax networks to limit the network of Dail to having the electrical signals be analog and the optical signals be digital in order to avoid the fiber optical cable from interfering with the analog signal. It also would have been obvious to have the receiver convert the digital signal back to analog for use or manipulation on the head end.

8. Regarding claim 2, Dail does not disclose digitizing the electrical signal, however Wala teaches digitizing a signal to arrive at a serially transported digital signal (col. 3 lines 5-10). Although Wala does not teach generating a signal to at least 850 Mpbs (Wala transmits at 552.96 Mbps (col. 3 lines 5-10)), the digitizing rate is a design choice.

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dail (UPSN 5,765,097) in view of Wala (USPN 6,112,086) and Beveridge (USPN 5,469,495) as applied to claim 1 above, and further in view of Radice (USPN 5,138,440).

10. Dail in view of Wala and Beveridge does not disclose separately converting signals from the plurality of coaxial cables into separate, n-bit signals, and combining the separate n-bit signals into a serial data stream, although Beveridge does teach multiplexing multiple signals into one stream for transmission (col. 3 lines 7-12) and Wala does teach transmission by a serial data stream (col. 3 lines 9-10). Radice teaches a method of multiplexing multiple signals into one stream for transmission by separately converting signals from the plurality of cables into separate, n-bit signals, and combining them into a serial data stream (Fig. 1 and col. 3 lines 18-30 and 5-10). Radice does this to allow the system to receive and transmit multiple asynchronous signals (col. 1 lines 44-47). It would have been obvious to one of ordinary skill in the art of hybrid fiber/coax cables to modify Dail in view of Wala and Beveridge by Radice to multiplex the multiple signals into one data stream by separately converting the signals and them combining them in order to allow for asynchronous reception and transmission of multiple asynchronous signals.

11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dail (UPSN 5,765,097) in view of Wala (USPN 6,112,086) and Beveridge (USPN 5,469,495) as applied to claim 1 above, and further in view of Hoffart (USPN 5,341,216) and Radice (USPN 5,138,440).

12. Dail in view of Wala and Beveridge does not disclose having the transmitter incorporate data from a status monitor in the baseband signal transmitted to the head end. Hoffart teaches the use of a status monitor which can transmit its status data (Fig. 2 part number 8 and col. 2 lines 6-10 and col. 6 lines 16-40). The purpose of this monitor is to provide status data to a central head end monitor (Fig. 2 part number 8 and col. 3 lines 6-10). Radice teaches including auxiliary data in the data stream by multiplexing (incorporating) the auxiliary data with the data stream, (Fig. 1

and col. 3 lines 24-30). It is implicit that this is done to transport the auxiliary data somewhere where it can be processed. It would have been obvious to one of ordinary skill in the art of hybrid fiber/coax networks at the time of the invention to modify Dail in view of Wala and Beveridge to include the status monitor of Hoffart to monitor the status of a link and use Radice's method of incorporating this auxiliary data in the data stream to transmit it to a central head end monitoring unit where it could be processed.

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dail (UPSN 5,765,097) in view of Wala (USPN 6,112,086) and Beveridge (USPN 5,469,495) as applied to claim 1 above, and further in view of Philips et al. (USPN 5,872,810) and Radice (USPN 5,138,440).

14. Dail in view of Wala and Beveridge does not disclose having the transmitter incorporate bit error rate link performance data in the baseband signal transmitted to the head end. Philips teaches sending statistics such as the bit error rate to a host computer where the statistics can be interpreted in real-time (col. 28 lines 23-28). Radice teaches including auxiliary data in the data stream by multiplexing, incorporating the auxiliary data with the data stream, (Fig. 1 and col. 3 lines 24-30). It is implicit that this is done to transport the auxiliary data somewhere where it can be processed. It would have been obvious to one of ordinary skill in the art of hybrid fiber/coax networks at the time of the invention to modify Dail in view of Wala and Beveridge to include the bit error rate link performance data of Philips and use Radice's method of incorporating this auxiliary data in the data stream to transmit it to a central head end monitoring unit where it could be processed in real time.

15. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dail (UPSN 5,765,097) in view of Wala (USPN 6,112,086) and Beveridge (USPN 5,469,495) as applied to claim 1 above, and further in view of Petroff (USPN 5,198,989).

16. Dail in view of Wala and Beveridge does not disclose a transmitter which combines the signals from the plurality of coaxial cables prior to converting the signals to baseband digital signals. Dail in view of Wala and Beveridge discloses combining the signals and performing analog to digital conversion on the signal before it is transmitted, but Dail in view of Wala and Beveridge does not specifically disclose combining the signals prior to converting the signals from analog to digital. Petroff discloses that one way to convert and combine a signal (col. 6 lines 19-22) is to combine the signals in a parallel-to-serial converter and then convert this serial stream to a digital stream in an analog to digital converter (col. 6 lines 22-29 and Fig. 2 part nos. 102 and 106). It would have been obvious to one skilled in the art of hybrid fiber/coax networks to take Dail in view of Wala and Beveridge's system and implement it by using a multiplexer to combine signals before performing analog to digital conversion.

17. Claim 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dail (UPSN 5,765,097) in view of Wala (USPN 6,112,086) in further view of Beveridge (USPN 5,469,495) and Vander Mey (USPN 5,777,544).

18. Regarding claim 7, Dail discloses a transmitter, disposed at the optical distribution node, that is responsive to signals from the plurality of coaxial cable links, that converts electrical signals to optical signals and that transmits the optical signals to the head end over the at least one optical link (col. 3 lines 40-55).

19. Dail does not specifically disclose a transmitter having at least one bandpass filter that is operable to select a portion of the frequency spectrum that is associated with return path signals; having at least one analog to digital converter, responsive to the at least one bandpass filter, that creates baseband digital data; and having at least one multiplexer, responsive to the at least one analog to digital converter, that creates a serial data stream from the baseband digital data. Vander Mey teaches the use of a bandpass filter on the input of a device to filter out out-of-band interference (col. 6 lines 4-6). It is implicit that the desired signal would be present in the portion of the frequency spectrum that is associated with return path signals for a hybrid fiber/coax network, and so the filter would be operable to select a portion of the frequency spectrum that is associated with return path signals. It is also obvious that the filter would be placed between the channel and any other device, such as an analog to digital converter, so that the converter device would not be subject to interference. Wala and Beveridge teach using an optical link transmitter to pass digital signals converted from analog signals (Wala: col. 3 lines 3-18; Beveridge: col. 2 lines 1-18). It is obvious to convert the analog signals to digital signals an analog-to-digital converter is needed. Wala does this because "the ability to analog modulate and demodulate light, the limitations imposed by line reflections, and path loss on the fiber all introduce significant distortion and errors into an analog modulated signal" (col. 2 lines 58-61). Beveridge also teaches the use of baseband digital signals and of using a multiplexer to combine multiple signals into one transmitted stream (col. 2 lines 10-20 and Fig. 5). It is implicit that this is done for efficient use of the communications line. It would have been obvious to one of ordinary skill in the art of hybrid fiber/coax transmitters to modify Dail's transmitter to include a bandpass filter to filter out interference, to include an analog-to-digital converter to allow for superior

digital transmission over the optic fiber, and to include a multiplexer to allow for multiple incoming signals to be combined into a single transmitted signal.

20. Regarding claim 9, Vander Mey discloses the use of a bandpass filter to limit out-of-band interference. The range set for the bandpass filter in claim 9 corresponds to the range of desirable frequencies and so is a design choice. It would have been obvious to one of ordinary skill in the art of optical transmitters to choose this band.

21. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dail (UPSN 5,765,097) in view of Wala (USPN 6,112,086), Beveridge (USPN 5,469,495), and Vander Mey (USPN 5,777,544) as applied to claim 7 above, and further in view of Heiling (USPN 5,136,410), Hoffart (USPN 5,341,216), and Radice (USPN 5,138,440).

22. Dail in view of Wala and Beveridge and Vander Mey does not disclose having the transmitter that includes a monitor which monitors the operation of the optical distribution node and that creates status data for transmission to a head end in the serial data stream. Heiling teaches a monitor which can continuously monitor the status of the optical data link to which it is attached (col. 10 lines 48-51). Hoffart teaches the use of a status monitor which can transmit its status data (Fig. 2 part number 8 and col. 2 lines 6-10 and col. 6 lines 16-40). The purpose of this monitor is to provide status data to a central head end monitor (Fig. 2 and col. 3 lines 6-10). Radice teaches including auxiliary data in the data stream by multiplexing, incorporating the auxiliary data with the data stream, (Fig. 1 and col. 3 lines 24-30). It is implicit that this is done to transport auxiliary data somewhere where it could be processed. It would have been obvious to one of ordinary skill in the art of hybrid fiber/coax networks at the time of the invention to modify Dail in view of Wala, Beveridge, and Vander Mey to include the status monitor for the

optical link which can transmit its data through the data stream to a central head end monitoring unit where the data could be acted upon accordingly.

23. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dail (UPSN 5,765,097) in view of Wala (USPN 6,112,086) and Beveridge (USPN 5,469,495) and Vander Mey (USPN 5,777,544) as applied to claim 7 above, and further in view of Radice (USPN 5,138,440).

24. Although Dail in view of Wala, Beveridge, and Vander Mey discloses converting the analog signal to a digital signal for transmission over the optical link, Dail in view of Wala, Beveridge, and Vander Mey does not specifically disclose having at least one analog to digital converter for each coaxial link associated with the transmitter. Radice teaches using one analog to digital converter for each coaxial link associated with the transmitter (Fig. 1 and 2 and col. 3 lines 18-30) as a way to convert an analog signal to a digital signal for transmission over an optical link (col. 2 lines 5-6). It would have been obvious to one of ordinary skill in the art of optical node transmitters that it would be possible to implement Dail in view of Wala, Beveridge, and Vander Mey's system of converting an analog signal to a digital signal for transmission over an optical link by placing an analog to digital converter on each coaxial link associated with the transmitter.

25. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dail (UPSN 5,765,097) in view of Wala (USPN 6,112,086) and Beveridge (USPN 5,469,495) and Vander Mey (USPN 5,777,544) as applied to claim 7 above, and further in view of Ferris (USPN 3,931,473).

26. Although Dail in view of Wala, Beveridge, and Vander Mey discloses having a multiplexer to combine the input signals into a single transmitted data stream, Dail in view of Wala, Beverdige, and Vander Mey does not disclose having a two stage multiplexer in which the first stage multiplexes each coaxial link and the second stage multiplexes the output of the first stage. Ferris teaches that it is known in prior art to use a multi-stage multiplexer in which the first stage multiplexes a signals and a second stage multiplexes the output of the first stage (Fig. 1). Ferris also states that such a set-up "because of its second level nature inherently carries a large amount of information" (col. 1 lines 25-26). It would have been obvious to one of ordinary skill in the art of optical node transmitters to implement Dail in view of Wala, Beveridge, and Vander Mey's multiplexer as a second-level multiplexer in order to have the optical node be able to carry large amounts of information.

27. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dail (UPSN 5,765,097) in view of Wala (USPN 6,112,086) and Beveridge (USPN 5,469,495) and Vander Mey (USPN 5,777,544) as applied to claim 7 above, and further in view of Philips et al. (USPN 5,872,810) and Radice (USPN 5,138,440).

28. Dail in view of Wala and Beveridge does not disclose having the transmitter incorporate bit error rate link performance data in the baseband signal transmitted to the head end. Philips teaches sending statistics such as the bit error rate to a host computer where the statistics can be interpreted in real-time (col. 28 lines 23-28). Radice teaches including auxiliary data in the data stream by multiplexing, incorporating the auxiliary data with the data stream, (Fig. 1 and col. 3 lines 24-30). It would have been obvious to one of ordinary skill in the art of optical node transmitters at the time of the invention to modify Dail in view of Wala, Beveridge, and Vander

Mey to include the bit error rate link performance data of Philips and use Radice's method of incorporating this auxiliary data in the data stream to transmit it to a central head end monitoring unit where it could be processed in real time.

29. Claim 13, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dail (UPSN 5,765,097) in view of Wala (USPN 6,112,086) in further view of Beveridge (USPN 5,469,495) and Farhan (USPN 6,356,369).

30. Regarding claim 13, Dail discloses a hybrid fiber/coax network (col. 2 lines 34-38). This network has at least one optical distribution node coupled to a head end over at least one fiber optic link (col. 3 lines 9-15); a plurality of coaxial cable links coupled to each of the at least one optical distribution node (col. 3 lines 9-20); and a transmitter, disposed at the optical distribution node, that is responsive to signals from the plurality of coaxial cable links, that converts electrical signals to optical signals and that transmits the optical signals to the head end over the at least one optical link (col. 3 lines 40-55).

31. Dail does not specifically disclose that the electrical signals are analog, although the electrical signal could be analog. Dail also does not disclose that the optical signals are baseband digital signals, although the optical signal could be baseband serial digital data stream. Additionally, Dail does not disclose driving a laser to transmit the digital data in a baseband digital format to a head end of the network. Wala and Beveridge teach using an optical link to pass digital signals converted from analog signals. (Wala: col. 3 lines 3-18; Beveridge: col. 2 lines 1-18). Wala does this because "the ability to analog modulate and demodulate light, the limitations imposed by line reflections, and path loss on the fiber all introduce significant distortion and errors into an analog modulated signal" (col. 2 lines 58-61). Although Wala does

not teach the use of a baseband digital signal Beveridge does (col. 2 lines 10-20). Wala does teach digitizing a signal to arrive as a serially transported digital signal (col. 3 lines 5-10). Farhan teaches the use of driving a digital laser to transmit the digital data (col. 6 line 1) as a way to transmit data on a hybrid fiber/coax network (col. 1 lines 25-32). It would have been obvious to one of ordinary skill in the art of hybrid fiber/coax networks to limit the network of Dail to having the electrical signals be analog and the optical signals be serial digital baseband transmitted by a digital laser in order to avoid the fiber optical cable from interfering with the analog signal.

32. Regarding claim 14, Dail does not disclose digitizing the electrical signal, however Wala teaches digitizing a signal to arrive at a serially transported digital signal (col. 3 lines 5-10). Although Wala does not teach generating a signal to at least 850 Mpbs (Wala transmits at 552.96 Mbps (col. 3 lines 5-10)), the digitizing rate is a design choice.

33. Regarding claim 17, Dail discloses a hybrid fiber/coax network (col. 2 lines 34-38). This network has at least one optical distribution node coupled to a head end over at least one fiber optic link (col. 3 lines 9-15) and a plurality of coaxial cable links coupled to each of the at least one optical distribution node (col. 3 lines 9-20) which transport upstream data to the optical distribution node (col. 3 line 1-3). Dail does not specifically disclose that the electrical signals are analog, although the electrical signal could be analog. Wala and Beveridge teach using an optical link to pass digital signals converted from analog signals. (Wala: col. 3 lines 3-18; Beveridge: col. 2 lines 1-18). Wala does this because "the ability to analog modulate and demodulate light, the limitations imposed by line reflections, and path loss on the fiber all introduce significant distortion and errors into an analog modulated signal" (col. 2 lines 58-61).

It would have been obvious to one of ordinary skill in the art of hybrid coax/fiber networks to have the optical distribution node receive analog, upstream data from a number of coaxial links in order to allow it to be transported via a fiber optic network.

34. Claim 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dail (UPSN 5,765,097) in view of Wala (USPN 6,112,086), Beveridge (USPN 5,469,495), and Farhan (USPN 6,356,369) as applied to claim 13 above, and further in view of Radice (USPN 5,138,440).

35. Dail in view of Wala, Beveridge, and Farhan does not disclose separately converting signals from one or more of coaxial cables into separate, n-bit signals, and combining the separate n-bit signals into a serial data stream, although Beveridge does teach multiplexing multiple signals into one stream for transmission (col. 3 lines 7-12) and Wala does teach transmission by a serial data stream (col. 3 lines 9-10). Radice teaches a method of multiplexing multiple signals into one stream for transmission by separately converting signals from the plurality of cables into separate, n-bit signals, and combining them into a serial data stream (Fig. 1 and col. 3 lines 18-30 and 5-10). Radice does this to allow the system to receive and transmit multiple asynchronous signals (col. 1 lines 44-47). It would have been obvious to one of ordinary skill in the art of hybrid fiber/coax cables to modify Dail in view of Wala and Beveridge by Radice to multiplex the multiple signals into one data stream by separately converting the signals and them combining them in order to allow for asynchronous reception and transmission of multiple asynchronous signals.

36. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beveridge (USPN 5,440,335) in view of Tsutsui (USPN 5,680,130).

37. Beveridge discloses an optical receiver that is operable to receive serial digital baseband signals from an optical link (col. 2 lines 1-22 and col. 7 lines 37-43). This receiver has at least one demultiplexer which is responsive to the optical receiver that demultiplexes the digital baseband signal (col. 7 lines 37-43). This receiver also has at least one digital to analog converter that creates analog signals for the head end (col. 2 lines 20-24). Beveridge does not specifically disclose that the digital to analog converter is responsive to the at least one demultiplexer. However, seeing as the transmitter both demultiplexes the incoming digital signal and converts it to an analog signal, it would be obvious to have a digital to analog converter which is responsive to the at least one demultiplexer. Beveridge also does not disclose a filter that is operable to compensate for quantization effects in the frequency spectrum that is associated with return path signals for a hybrid fiber/coax network. Tsutsui teaches the use of a filter to compensate for quantization effects (col. 1 lines 60-62). It would have been obvious to one of ordinary skill in the art of receivers to include a filter to get rid of unwanted quantization noise in the incoming signal.

38. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beveridge (USPN 5,440,335) in view of Tsutsui (USPN 5,680,130) as applied to claim 18 above, and further in view of Heiling (USPN 5,136,410), Hoffart (USPN 5,341,216), and Radice (USPN 5,138,440).

39. Beveridge in view of Tsutsui does not disclose having the receiver have the demultiplexer remove status data fro the head end from the serial baseband signal. Heiling teaches a monitor which can continuously monitor the status of the optical data link to which it is attached (col. 10 lines 48-51). Hoffart teaches the use of a status monitor which can transmit its

status data (col. 2 lines 6-10 and col. 6 lines 18-24 and 36-40). The purpose of this monitor is to provide status data to a central head end monitor (col. 3 lines 6-10). Radice teaches including auxiliary data in the data stream by multiplexing, incorporating the auxiliary data with the data stream, (Fig. 1 and col. 3 lines 24-30). Radice also teaches taking that auxiliary data back out of the data stream at the receive end through demultiplexing (Fig. 1). It would have been obvious to one of ordinary skill in the art of receivers at the time of the invention to modify Beveridge in view of Tsutsui to demultiplex any status data arriving from a status monitor to a central head end monitoring unit in order for the data to be processed.

40. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beveridge (USPN 5,440,335) in view of Tsutsui (USPN 5,680,130) as applied to claim 18 above, and further in view of Radice (USPN 5,138,440).

41. Although Beveridge in view of Tsutsui discloses that there is digital to analog conversion taking place and that the receiver sends data to one or more coax cables, Beveridge in view of Tsutsui does not specifically disclose having a digital to analog converter on each coax link. Radice teaches using one analog to digital converter for each coaxial link associated with the receiver as a way to convert a digital signal to an analog signal after reception over an optical link (Fig. 1 and 3 and col. 4 line 62-col. 5 line 5). It would have been obvious to one of ordinary skill in the art of receivers to implement the digital to analog conversion of the receiver by having digital to analog conversion on each of the receiver's coax cables.

42. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beveridge (USPN 5,440,335) in view of Tsutsui (USPN 5,680,130) as applied to claim 18 above, and further in view of Ferris (USPN 3,931,473) and Brouard et al. (USPN 4,244,046).

43. Although Beveridge in view of Tsutsui discloses having a demultiplexer to disassemble the received data stream into separate signals, Beveridge in view of Tsutsui does not disclose having a two stage demultiplexer in which the first stage multiplexes the received data stream and the second stage demultiplexes the output of the first stage. Ferris teaches that it is known in prior art to use a multi-stage multiplexer in which the first stage multiplexes a signals and a second stage multiplexes the output of the first stage (Fig. 1). Ferris also states that such a set-up "because of its second level nature inherently carries a large amount of information" (col. 1 lines 25-26). Brouard teaches the use of a multi-stage demultiplexer in order to reverse the process of a multi-stage multiplexer (Fig. 1). It would have been obvious to one of ordinary skill in the art of receivers to implement a two-stage demultiplexer in order to undo the process of a second-level multiplexer implemented in order to have the received signal be able to carry large amounts of information.

44. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beveridge (USPN 5,440,335) in view of Tsutsui (USPN 5,680,130) as applied to claim 18 above, and further in view of Philips et al. (USPN 5,872,810) and Radice (USPN 5,138,440).

45. Beveridge in view of Tsutsui does not disclose having the receiver remove bit error rate data from the serial baseband signal using a demultiplexer. Philips teaches sending statistics such as the bit error rate to a host computer where the statistics can be interpreted in real-time (col. 28 lines 23-28). Radice teaches including auxiliary data in the data stream by multiplexing, incorporating the auxiliary data with the data stream, (Fig. 1 and col. 3 lines 24-30). Radice also teaches taking that auxiliary data back out of the data stream at the receive end through demultiplexing (Fig. 1). It would have been obvious to one of ordinary skill in the art of

receivers at the time of the invention to modify Beveridge in view of Tsutsui to demultiplex any bit error data arriving at the central head end monitoring unit in order for the data to be processed.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (703)305-6970. The examiner can normally be reached on Mon.-Fri. 7:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (703)308-6602. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-6743 for regular communications and (703)308-9051 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

Daniel J. Ryman
Examiner
Art Unit 2665

DJR

Daniel J. Ryman
June 25, 2002

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